

## **AMENDMENTS TO THE SPECIFICATION:**

Please amend the specification as follows:

Page 13, replace the paragraph beginning on line 3 through page 14, line 2 with the following amended paragraph:

The method for manufacturing a relief material for seamless printing according to ~~claim~~ item 1 of the present invention is a method for manufacturing a relief material for seamless printing using a liquid-state photosensitive resin, comprising a setting step of setting a workpiece using either of a printing cylinder and a printing sleeve integrally supported by a metallic mandrel to holding rotating means for holding and rotating the workpiece, a supplying step of supplying a liquid-state photosensitive resin having a viscosity capable of holding an applying shape without being influenced by the gravity and centrifugal force due to rotation to a resin receiving plate which has a predetermined inclination and of which front end has a doctor blade shape by resin supplying means at a desired applied width in a linear mode, a molding step of molding the liquid-state photosensitive resin supplied to the resin receiving plate into a predetermined applied thickness by a front-end cutting edge of the resin receiving plate while rotating the workpiece and applying the resin to the outer periphery of the workpiece at a desired applied width, and an exposing step of forming a photosensitive resin cured layer by applying high-intensity ultraviolet light to the liquid-state photosensitive resin applied to the outer periphery of the workpiece while rotating the workpiece and thereby optically curing the liquid-state photosensitive resin so that it can be carved by an infrared laser beam.

Page 14, replace the paragraph beginning on line 16 with the following amended paragraph:

Moreover, the method for manufacturing a relief material for seamless printing according to ~~claim~~ item 2 of the present invention is characterized in that at least one end of the resin receiving plate has a resin flow preventive movable dam linearly movable in the axis center direction of the workpiece in ~~claim~~ item 1.

Page 14, replace the paragraph beginning on line 24 through page 15, line 2 with the following amended paragraph:

Furthermore, the method for manufacturing a relief material for seamless printing according to ~~claim~~ item 3 of the present invention further comprises a shaping step of shaping the surface of the photosensitive resin cured layer in ~~claim~~ item 1.

Page 15, replace the paragraph beginning on line 9 with the following amended paragraph:

Furthermore, the method for manufacturing a relief material for seamless printing according to ~~claim~~ item 4 of the present invention is characterized in that the viscosity of the liquid-state photosensitive resin supplied in the supplying step ranges between 6 and 50kPa·s (both included) at 20°C and the ultraviolet light in the exposing step has a wavelength area of 200 to 400 nm and an ultraviolet intensity of 10mW/cm<sup>2</sup> or more in ~~claim~~ item 1.

Page 16, replace the paragraph beginning on line 8 with the following amended paragraph:

Furthermore, the method for manufacturing a relief material for seamless printing according to ~~claim~~ item 5 of the present invention is characterized in that by linearly moving the resin supplying means in the axis center direction of the workpiece in the supplying step, either of first supply for supplying the liquid-state photosensitive resin

housed in a resin vessel to the resin receiving plate in the linear mode and a second supply for supplying liquid-state photosensitive resin to the resin receiving plate from at least one or more resin supplying nozzles of the resin supplying means provided for the desired applied width is performed in ~~claim~~ item 1 or 4.

Page 16, replace the paragraph beginning on line 21 through page 17, line 2 with the following amended paragraph:

Furthermore, the method for manufacturing a relief material for seamless printing according to ~~claim~~ item 6 of the present invention is characterized by applying liquid-state photosensitive resin to the outer periphery of the workpiece at a desired thickness while gradually expanding the gap between the front-end cutting edge of the resin receiving plate and the outer periphery of the workpiece by moving the resin receiving plate vertically to the axis center of the workpiece in the molding step in any one of ~~claims~~ items 1 to 5.

Page 17, replace the paragraph beginning on line 8 with the following amended paragraph:

Furthermore, the method for manufacturing a relief material for seamless printing according to ~~claim~~ item 7 of the present invention is characterized by performing the treatment in the supplying step a plurality of times in any one of ~~claims~~ items 1 to 6.

Page 17, replace the paragraph beginning on line 16 with the following amended paragraph:

Furthermore, the method for manufacturing a relief material for seamless printing according to ~~claim~~ item 8 of the present invention further comprises a first removing step for removing extra photosensitive resin cured layer optically cured by exceeding a

desired width in the exposing step to a desired thickness in parallel with or after the shaping step in any one of ~~claims~~ items 1 to 7.

Page 18, replace the paragraph beginning on line 1 with the following amended paragraph:

Furthermore, the method for manufacturing a relief material for seamless printing according to claim 9 of the present invention further comprises a carving step for fusion-removing a photosensitive resin cured layer by rotating the workpiece while linearly-moving laser carving means for carving the photosensitive resin cured layer on the outer periphery of the workpiece in the axis center direction of the workpiece and focusing one or more infrared laser beams applied from the laser carving means on the photosensitive resin cured layer in accordance with the control by a digital image recording signal after either of the shaping step and the first removing step in any one of ~~claims~~ items 1 to 8.

Page 18, replace the paragraphs beginning on line 19 through page 19, line 7 with the following amended paragraphs:

Furthermore, the method for manufacturing a relief material for seamless printing according to ~~claim~~ item 10 of the present invention further comprises a second removing step for removing a photosensitive resin cured layer in an area in which formation of the relief image in the carving step is unnecessary to a desired thickness in parallel with or after the shaping step in ~~claim~~ item 9.

Furthermore, the method for manufacturing a relief material for seamless printing according to ~~claim~~ item 11 of the present invention is characterized by laser-carving only a relief image forming area by performing interlaced scanning for moving the laser

carving means at a high speed in the image unnecessary area in the carving step when the photosensitive resin cured layer in the area in which formation of the relief image is unnecessary is removed to a desired thickness in the second removing step in ~~claim~~ item 10.

Page 19, replace the paragraph beginning on line 14 with the following amended paragraph:

Furthermore, the method for manufacturing a relief material for seamless printing according to ~~claim~~ item 12 of the present invention further comprises a cleaning step for cleaning the photosensitive resin cured layer by cleaning means for spraying cleaning fluid having a pressure between 0.2 and 30 MPa (both included) and a temperature between 40 and 140°C (both included) after any one of the carving step, removing step, and shaping step in any one of ~~claims~~ items 7 to 9.

Page 20, replace the paragraph beginning on line 16 with the following amended paragraph:

Furthermore, the method for manufacturing a relief material for seamless printing according to claim 13 of the present invention further comprises a post-exposing step for applying ultraviolet light to a relief image layer on the outer periphery of the workpiece while rotating the workpiece after either of the carving step and cleaning step in any one of ~~claims~~ items 9 to 12.

Page 20, replace the paragraph beginning on line 26 through page 21, line 5 with the following amended paragraph:

Furthermore, the method for manufacturing a relief material for seamless printing according to ~~claim~~ item 14 of the present invention further comprises a surface

modifying step for applying a surface modifying agent for modifying the surface of a relief image layer of the workpiece while rotating the workpiece to the relief image layer and drying the agent in ~~claim~~ item 13.

Page 21, replace the paragraph beginning on line 11 with the following amended paragraph:

Furthermore, the method for manufacturing a relief material for seamless printing according to claim 15 of the present invention is characterized by performing forcible heating and drying while applying the surface modifying agent to the relief image layer in the surface modifying step in ~~claim~~ item 12.

Page 21, replace the paragraph beginning on line 18 through page 22, line 17 with the following amended paragraph:

Furthermore, the apparatus for manufacturing a relief material for seamless printing according to ~~claim~~ item 16 of the present invention is an apparatus for manufacturing a relief material for seamless printing using a liquid-state photosensitive resin, which is characterized by including a workpiece continuous rotating mechanism having a structure capable of rotating by integrally connecting a workpiece to whose outer periphery the liquid-state photosensitive resin is applied, a resin supplying mechanism according to any one of a first resin supplying mechanism having a resin supplying nozzle integrated with a vessel for housing the liquid-state photosensitive resin and capable of linearly moving in the axis center direction of the workpiece, and a second resin supplying mechanism having at least one or more resin supplying nozzles in accordance with a desired applied width on a resin supplying header pipe-connected with the vessel for housing the liquid-state photosensitive resin, a resin applying

smoothing mechanism having a resin receiving plate whose front end has a doctor blade shape at a position facing the workpiece, having a structure which can linearly move in the direction vertical to the axis center of the workpiece and adjust a tilt angle, and an exposing mechanism capable of applying high-intensity ultraviolet light to liquid-state photosensitive resin applied to the outer periphery of the workpiece and smoothed and linearly moving the applying means in the direction vertical to the axis center of the workpiece.

Page 23, replace the paragraph beginning on line 2 with the following amended paragraph:

Furthermore, the apparatus for manufacturing a relief material for seamless printing according to ~~claim~~ item 17 of the present invention is characterized in that the resin receiving plate has a resin flow preventive movable dam capable of linearly moving in the axis center direction of the workpiece at at least one end in ~~claim~~ item 16.

Page 23, replace the paragraph beginning on line 11 with the following amended paragraph:

Furthermore, the apparatus for manufacturing a relief material for seamless printing according to ~~claim~~ item 18 of the present invention further comprises a working-tool holding pedestal mechanism capable of linearly moving a working-tool holding pedestal in the axis center direction of the workpiece and further includes at least one of a cutting mechanism, grinding mechanism, and polishing mechanism capable of linearly moving the working tool fixed by the holding pedestal in the direction vertical to the axis center of the workpiece in ~~claim~~ item 16 or 17.

Page 23, replace the paragraph beginning on line 25 through page 24, line 6 with the following amended paragraph:

Furthermore, the apparatus for manufacturing a relief material for seamless printing according to ~~claim~~ item 19 of the present invention is characterized by setting a moving-position detecting mechanism capable of detecting a moving position at the time of the linear movement to at least one of the resin supplying mechanism, resin applying smoothing mechanism, exposing mechanism, working-tool holding pedestal mechanism, cutting mechanism, grinding mechanism, and polishing mechanism in ~~claim~~ item 16 or 18.

Page 24, replace the paragraph beginning on line 10 with the following amended paragraph:

Furthermore, the apparatus for manufacturing a relief material for seamless printing according to ~~claim~~ item 20 of the present invention further comprises a rotation control mechanism for controlling a rotational position and circumferential speed of the workpiece by detecting the rotation angle of the workpiece in any one of ~~claims~~ items 16 to 19.

Page 24, replace the paragraph beginning on line 21 through page 25, line 3 with the following amended paragraph:

Furthermore, the apparatus for manufacturing a relief material for seamless printing according to ~~claim~~ item 21 of the present invention is characterized in that the first resin supplying mechanism is a resin supplying mechanism according to either of a dispenser system and a syringe system respectively having a constant quantity supplying characteristic for unit time and a vessel for housing the liquid-state



photosensitive resin is either of a bellows-type cartridge vessel and a back-lid push-to-connect-type cartridge vessel in any one of ~~claims~~ items 16 to 20.

Page 25, replace the paragraph beginning on line 6 with the following amended paragraph:

Furthermore, the apparatus for manufacturing a relief material for seamless printing according to ~~claim~~ item 22 of the present invention is characterized in that the second resin supplying mechanism is a resin supplying nozzle having at least one or more resin supplying cutting-off control mechanisms connected with either of a housing vessel having resin moving means for moving liquid-state photosensitive resin and a storing apparatus and the resin supplying means is a constant-quantity pressure pump having a constant-quantity supplying characteristic for unit time and a mechanism for removing bubbles in the liquid-state photosensitive resin is set between either of the housing vessel and the storing apparatus and the resin supplying nozzle in any one of ~~claims~~ items 16 to 21.

Page 25, replace the paragraph beginning on line 23 through page 26, line 9 with the following amended paragraph:

Furthermore, the apparatus for manufacturing a relief material for seamless printing according to ~~claim~~ item 23 of the present invention further comprises a signal converting mechanism for receiving and storing a digital image recording signal and converting the stored signal into a light-modulation control signal of an infrared laser beam, a laser generating mechanism for generating one or more infrared laser beams, a control mechanism for independently setting the infrared intensity and applying time every infrared laser beam, and a laser carving head mechanism having optical system

means fixed by the holding pedestal to focus the infrared laser beam on the surface of a photosensitive resin cured layer obtained by curing liquid-state photosensitive resin on the outer periphery of the workpiece in any one of ~~claims~~ items 16 to 22.

Page 26, replace the paragraph beginning on line 16 with the following amended paragraph:

Furthermore, the apparatus for manufacturing a relief material for seamless printing according to ~~claim~~ item 24 of the present invention further comprises either of a water-jet cleaning unit and a hot-water high-pressure cleaning unit for cleaning a relief image laser-carved on the photosensitive resin cured layer by the infrared laser beam in any one of ~~claims~~ items 16 to 23.

Page 26, replace the paragraph beginning on line 26 through page 27, line 4 with the following amended paragraph:

Furthermore, the apparatus for manufacturing a relief material for seamless printing according to ~~claim~~ item 25 of the present invention further comprises a surface modifying mechanism for spraying or applying a surface modifying agent for modifying the surface of a laser-carved relief image to the relief image in ~~claims~~ item 23 or 24.

Page 27, replace the paragraph beginning on line 8 with the following amended paragraph:

Furthermore, the apparatus for manufacturing a relief material for seamless printing according to ~~claim~~ item 26 of the present invention further comprises a heating mechanism for forcibly heating and drying the surface modifying agent applied to the relief image by the surface modifying mechanism in ~~claim~~ item 25.

Page 32, replace the paragraph beginning on line 19 with the following amended paragraph:

~~[[The]]~~ As the means for supplying means of the liquid-state photosensitive resin 10, a liquid-state photosensitive resin supplying unit 140 has a resin supplying nozzle 143 integrated with a cartridge vessel for ~~housing~~ containing the liquid-state photosensitive resin 10 and ~~a liquid-state photosensitive resin supplying unit 140 for~~ supplying the liquid-state photosensitive resin 10 to a resin receiving plate 151 in ~~[[the]]~~ a linear mode while the resin supplying nozzle 143 linearly moves to the axis center direction of the resin supplying nozzle 71 of the workpiece 70. Fig. 2 shows the axis center direction 71 and an axis center 72 of the workpiece 70 represented by a broken line. The liquid-state photosensitive-resin supplying unit 140 is described below as an example.

Page 55, replace the paragraph beginning on line 13 through page 56, line 3 with the following amended paragraph:

It is allowed to properly set the distance between the front end of the ~~dispenser-supplying nozzle~~ resin supplying nozzle 143 of the resin supplying unit 140 and the resin receiving plate 151. However, it is preferable that the distance is minimized (preferably, 50 mm or less, more preferably 20 mm or less) and the front end of the nozzle is set to a position slightly separate from a doctor at the front end of the plate 151 because bubbles are less convoluted. However, the front end of the nozzle is set to a position slightly separate from the doctor at the front end of the plate 151 to prevent the supplied liquid-state photosensitive resin 10 from immediately contacting with the outer periphery of the plate because the liquid-state photosensitive resin 10 supplied to

the plate 151 is slowly flown in the direction of the front-end doctor of the plate 151 due to gravity. In this case, it is allowed to properly set the tilt angle of the resin receiving plate in accordance with the relation with the viscosity of a resin used. However, it is preferable to set the tilt angle between 15 and 75°.